Utah Hospitals' Charity Care

Baseline Estimates for 2001

A report prepared for the Utah Department of Health

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Utah Hospitals' Charity Care: Baseline Estimates for 2001

Objectives

This project is a follow-up study to two studies conducted by students at the Brigham Young University (BYU) Marriott School of Management. The purpose of the studies was to evaluate the impact of the Primary Care Network (PCN) on the charity care provided by Utah hospitals. The first two studies suggest that it would be useful to know the amount of charity care provided by Utah hospitals before PCN came into existence. This information could be helpful in the future as policy makers evaluate the impact of PCN on Utah's health care system. Our primary objective was to arrive at an estimate of the total amount of charity care provided by Utah hospitals in calendar year 2001.

Background

The Primary Care Network (PCN) was established as a Medicaid waiver program in July 2002. One important feature of the program is that it was intended to improve overall health and reduce costs to the health care system by providing a limited benefit package to individuals that otherwise would not have access to reimbursement for primary health care. The underlying idea is that when individuals have access to a regular physician, problems can be addressed before they become crises. As a result, it is hoped that although PCN does not pay for inpatient hospitalizations, it can lead to a reduction in the amount of inpatient hospital charity care in Utah because of its emphasis on appropriate primary care.

Strategy

In order to arrive at an overall estimate of the total amount of charity care provided in 2001, the research team completed four important steps. First, they reviewed the accuracy and the quality of previously collected data. Next, they contacted hospitals that had not provided data in the past to see if they would be able to provide data at this time. Then they developed a statistical model that allowed them to use provided data from some hospitals to predict the amount of charity care for hospitals that chose not to provide data. Finally, they used the reported and estimated hospital data to create an estimate of the total amount of charity care provided in 2001. The following sections provide details on the results of these four activities.

Review Accuracy and Quality of Data

As part of the earlier BYU studies, data was collected from hospitals on charity care inpatient encounters; however, the definition of charity care that was used was not necessarily the same as that used by the Utah Hospitals and Health Systems Association (UHA). Each contributing hospital was contacted again as part of this study to ensure that the data provided was consistent with the UHA definition of charity care:

> Health services that were never expected to result in cash inflows. Charity Care results from a provider's policy to provide health care services free of charge to individuals who meet certain financial criteria.

Additionally, the research team verified that the data provided for 2001 was complete. In a few cases, hospitals had provided data that was incomplete or did not include charity care cases for 2001. Data issues were resolved with each participating hospital in one of three ways:

1. Data was found to be complete and consistent with the UHA definition.
2. Additional data (or modified data) was provided by the hospital.
3. The data was not used because it was incomplete.

Contact Hospitals about Missing Data

There are forty-one hospitals in Utah that have agreed to provide inpatient services for PCN clients. The researcher's intent was to include as many of these hospitals as possible so that the study would produce close to a statewide total. Of these hospitals, two were not included – one hospital is no longer in business and one hospital was undergoing a major organizational change in 2001. Thirty-nine hospitals of interest were used in the calculations.

Of these thirty-nine hospitals, twenty-four had initially provided complete and consistent data on charity care cases. Each of the other fifteen was contacted again to see if they would be able to provide the requested data. One of these fifteen was able to provide the requested data for 2001, making a total of twenty-five hospitals that had usable data.

Create Statistical Model

The next step was to create a statistical model to use the information from the twenty-five contributing hospitals to predict charity care for the fourteen non-contributing hospitals. It was decided that hospital specific factors found in the 2001 ST-1 file, a summary file from the Department of Health's Hospital Discharge Database, could be used for this purpose. The relevant data elements from the 2001 ST-1 file were match-merged with each of the thirty-nine hospital's inpatient charity care data. The factors that were selected as most relevant were:

1. The Hospital Case Mix Index for 2001.
2. An indicator for Urban vs. Rural.
3. An indicator for Investor-owned.
4. The total number of Medicaid patients seen in 2001.

The predictive model was a multiple regression model. The total amount of charity care for each hospital was transformed using the logarithmic function. This transformation is commonly used to improve the fit of models using financial data. Descriptive statistics and full regression output is included in Tables 1 and 2. The R-squared statistic for the model using the twenty-five contributing hospitals was 0.69, indicating that the four selected factors were capable of explaining 69% of the variability in charity care amounts for the twenty-five hospitals.

This model was then applied to the fourteen non-responding hospitals to predict each hospital's total charity care based on its value for the four selected factors.

Establish Baseline Total Charity Care for 2001

For all thirty-nine hospitals, this study used either an actual reported amount or a predicted amount of charity care. The researchers used reported amounts where available, and predicted amounts for the other fourteen hospitals. The resulting estimate of the total amount of charity care provided by Utah hospitals in 2001 is the sum of theses hospital totals - $199 million.

Of this amount, $169 million can be attributed to the eighteen urban hospitals, while $30 million is attributed to the twenty-one rural hospitals. Further analysis showed that 45% ($89.5 million) of the total charity care provided was for non-maternity patients ages 19-64, which is the sub-group most similar to PCN clients.

Summary and Conclusions

Using data provided by hospitals on their charity care cases for 2001, we estimated that the total amount of charity care provided in 2001 was $199 million. This figure will be useful for policy makers in the future as they evaluate whether PCN was successful in reducing inpatient charity care costs for Utah hospitals.

Table 1. Descriptive Statistics

Variable	Valid Obs.	Mean	Std. Dev.	Min	Max
Total Charity Care	25	7066572	1.21e+07	29104	4.00e+07
Urban	39	.4615385	.5050354	0	1
Investor Owned	39	.3076923	.4675719	0	1
Case Mix Index	39	.7586692	.3141692	.3026	1.7387
# Medicaid Pts.	39	941.7436	1166.093	37	5562

Table 2. Regression Output from the Statistical Model

```
Number of obs   =        25
F(  4,    20)   =     35.46
Prob > F        =    0.0000
R-squared       =    0.6892
Root MSE        =    1.3069

Dependent Variable: ln(Total Charity Care Costs)
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	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
Urban	1.39039	.6151847	2.26	0.035	0.10714	2.673644
Investor-Owned	-2.65855	.4285498	-6.20	0.000	-3.55249	-1.764611
Case Mix Index	4.13477	1.289062	3.21	0.004	1.44583	6.823705
# Medicaid Pts.	-0.00017	.0005565	-0.30	0.764	-0.00133	0.000991
Constant	10.92828	.7880103	13.87	0.000	9.28452	12.57204